

NSF User Facilities

...and Research Infrastructure



Matthew Hawkins
Head, NSF Large Facilities Office
NUFO Annual Meeting
June 15, 2016

Things to know about NSF:

- ~25 “Large Facilities” (Construction Cost > \$100M)
 - FFRDC’s = 4
 - Science & Technical > Directorates/Divisions/Programs
 - Assistance & Assurance > LFO & Other Business Offices
- “Mid-scale” Research Infrastructure
- Science and Engineering Centers

Things to know about NSF (cont'd):

~\$1.2B/year in Research Infrastructure operating costs

~\$200M/year in construction, acquisition & upgrade

Operations from **Research and Related Activities (R&RA)**

- Science Program account
- Facilities vs. Science balance

Construction and major up-grades from **Major Research Equipment and Facilities Construction (MREFC)** account

Things to know about NSF (cont'd):

- Primarily Cooperative Agreements
 - Governed by Uniform Guidance not FAR
 - “*Substantial Government Involvement*”
- Almost exclusively “COCO” (by Recipients)
- Benefit of the science community > Not for NSF
- Basic Research
- Bottom-up/Community Driven
- Organized by Science Directorates

Science Directorates:

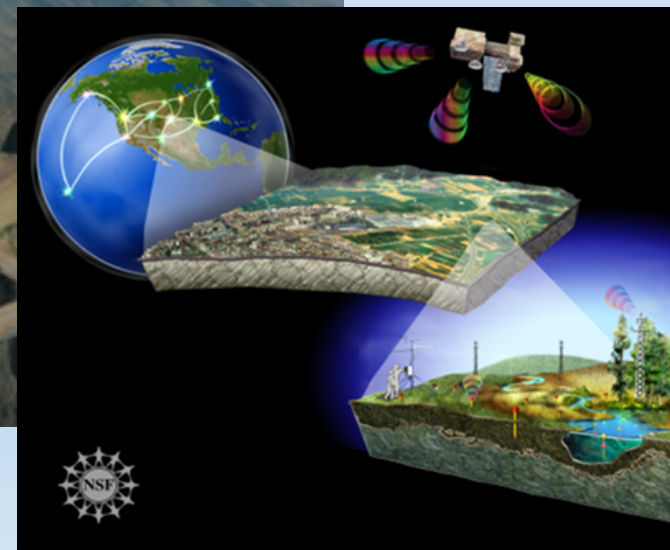
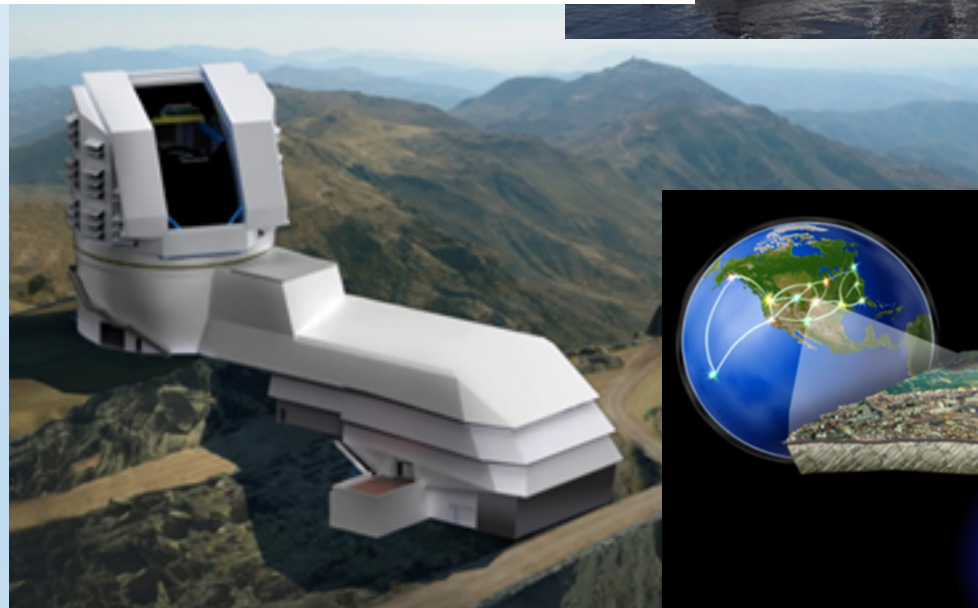
- Mathematical & Physical Sciences (MPS)
- Geosciences (GEO)
- Biological Sciences (BIO)
- Engineering (ENG)
- Computer & Information Science & Engineering (CISE)

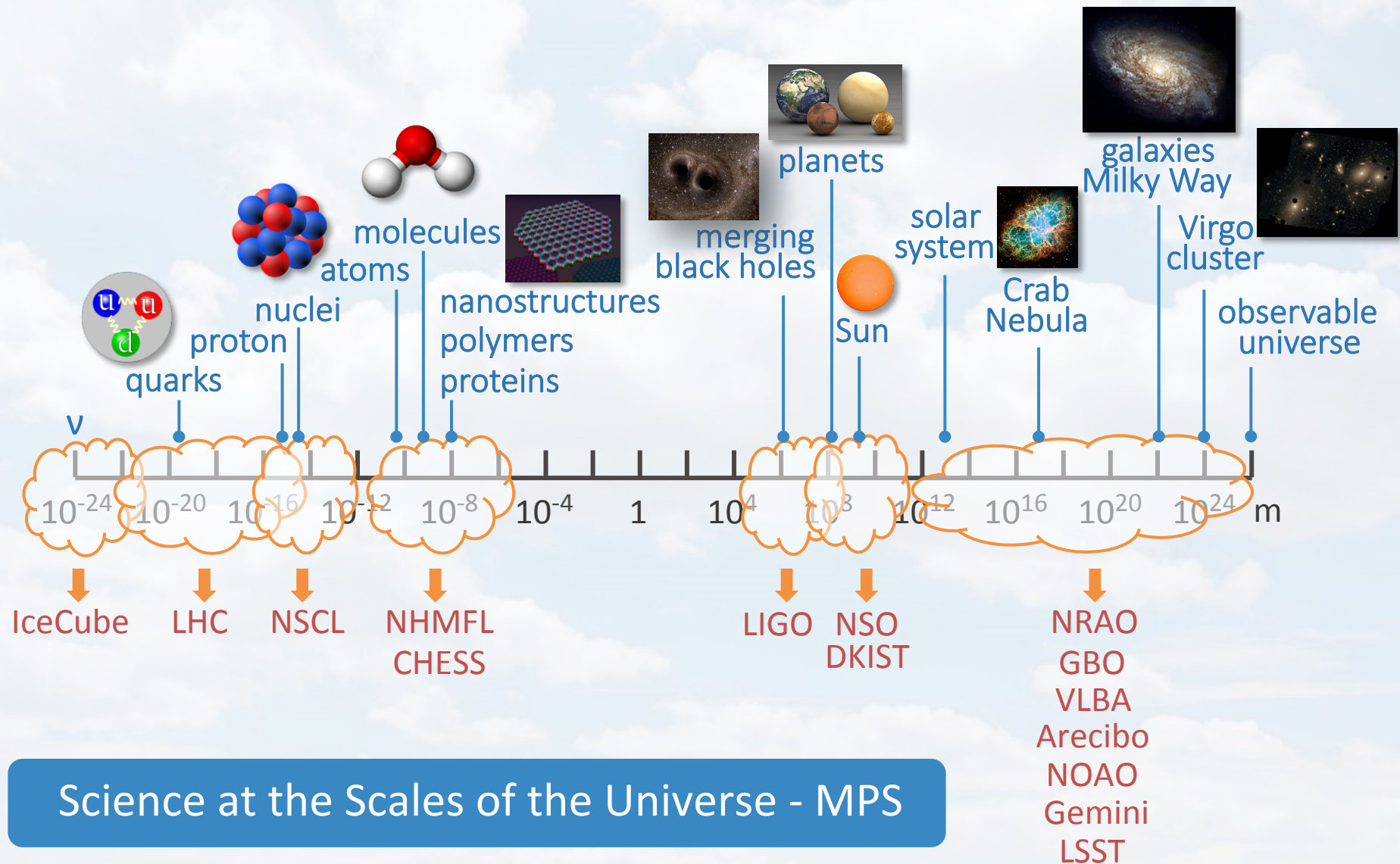
**Unique and diverse cultures between science disciplines
are represented in NSF Directorates**

Types of Research Infrastructure:

- Radio & optical telescopes (Gemini, DKIST, LSST)
- Distributed observatories (NEON, OOI, LIGO)
- Research vessels and aircraft (Academic Fleet, NCAR)
- Particle accelerators & detectors (LHC, IceCube)
- McMurdo & Palmer Stations (Antarctica)
- High Performance Computing (BlueWaters, XCEDE)
- Magnetism and Materials (MagLab)

Land, Air, Sea & Space...and the spaces between!

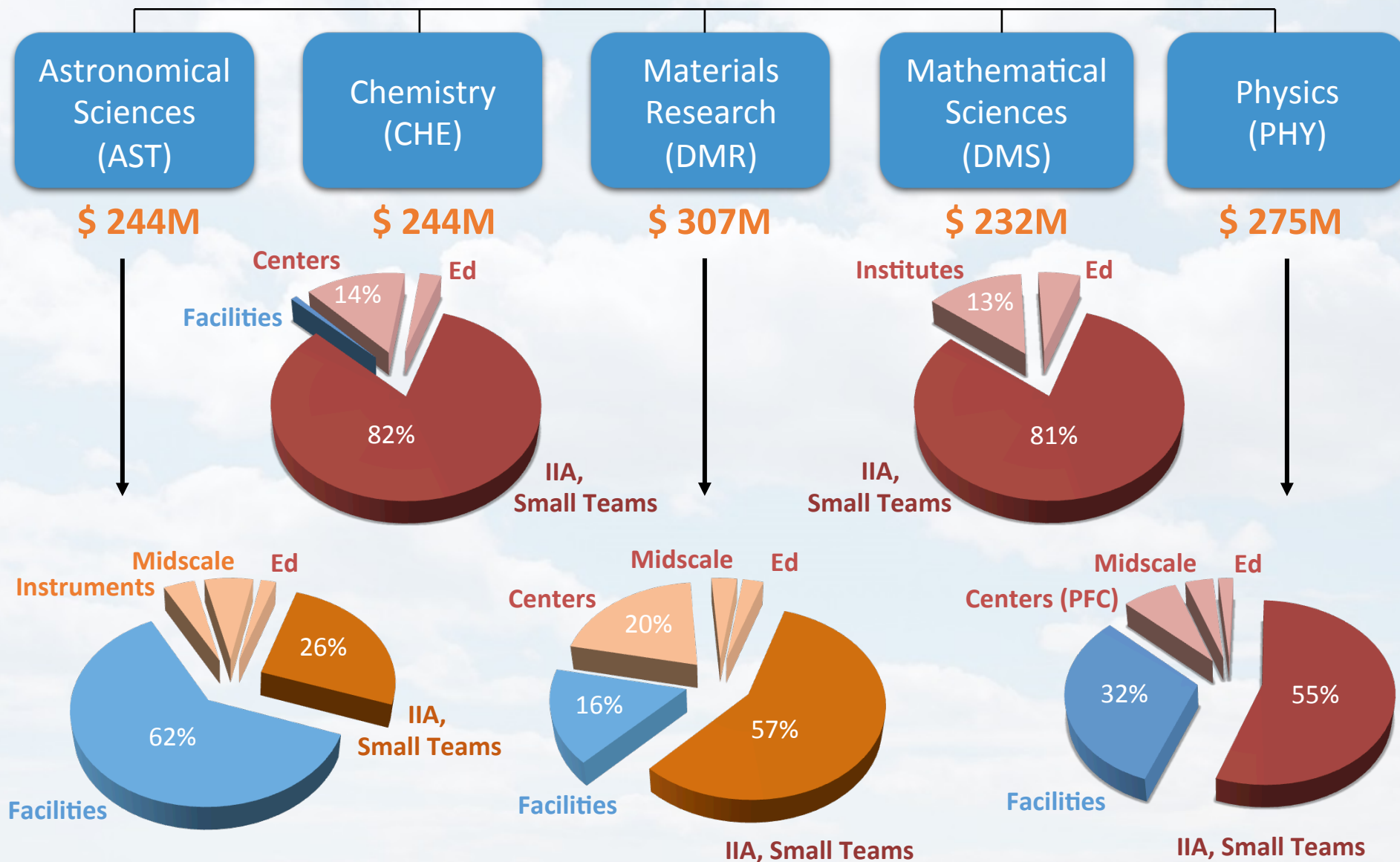




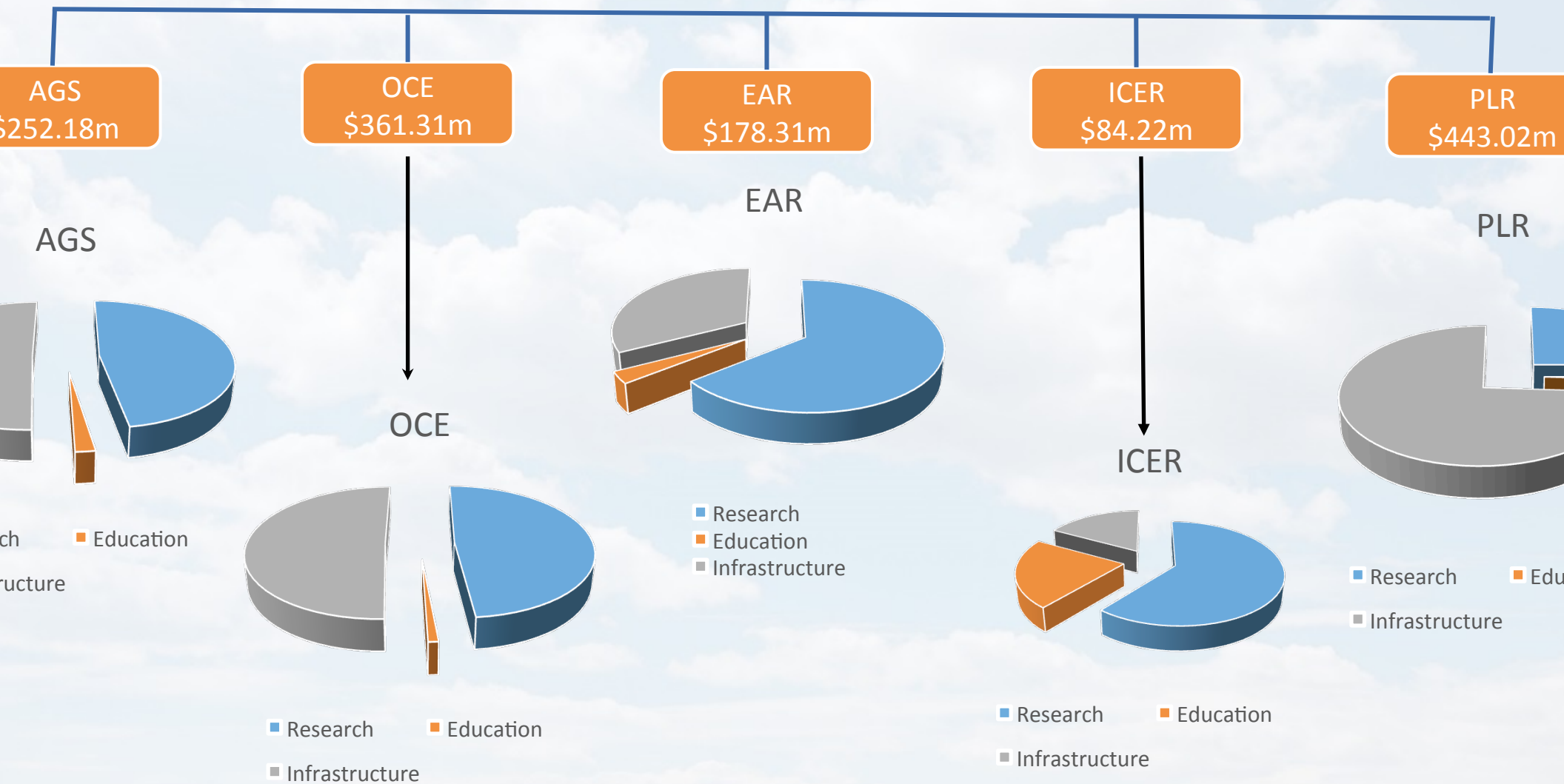
Science at the Scales of the Universe - MPS

FY 2015

Mathematical and Physical Sciences (MPS)

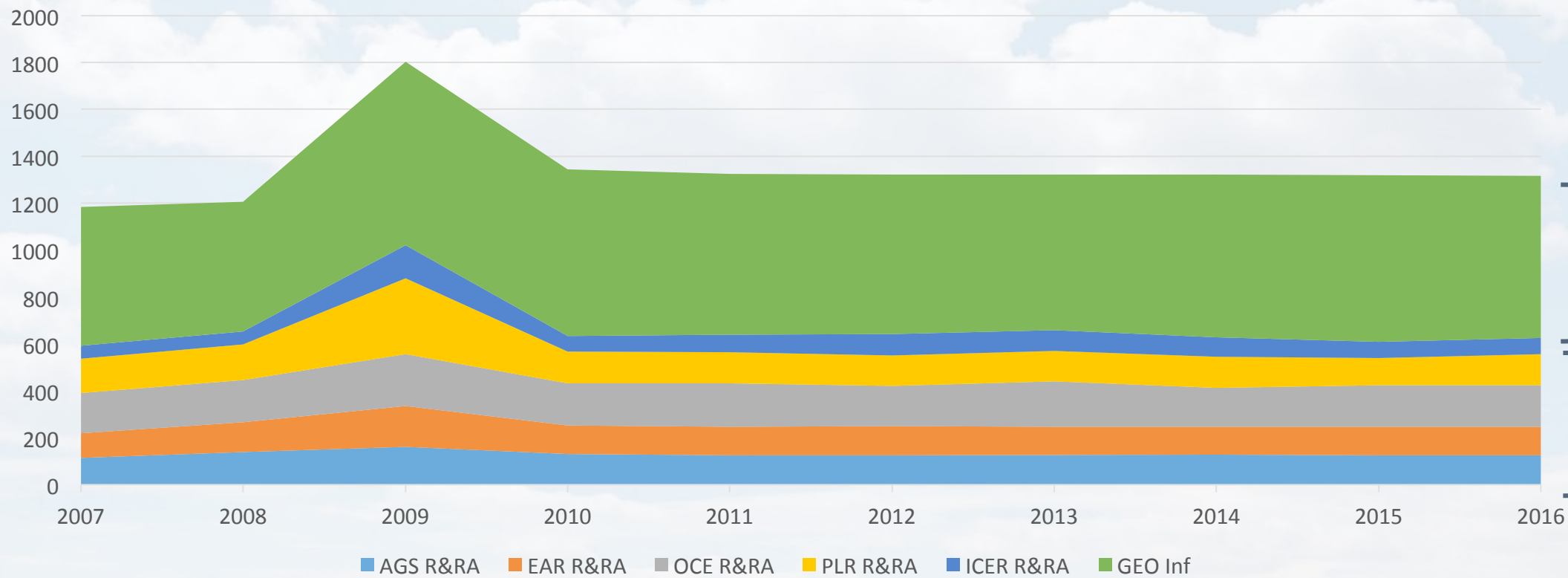


Geosciences FY 2015



Geosciences Operations Costs

FY 2015 R&RA (Actual)



FY 2015

Biological Sciences (BIO)

Biological
Infrastructure
(DBI)

\$ 144M

Molecular &
Cellular BIO
(MCB)

\$ 133M

Integrated Org
Systems
(IOS)

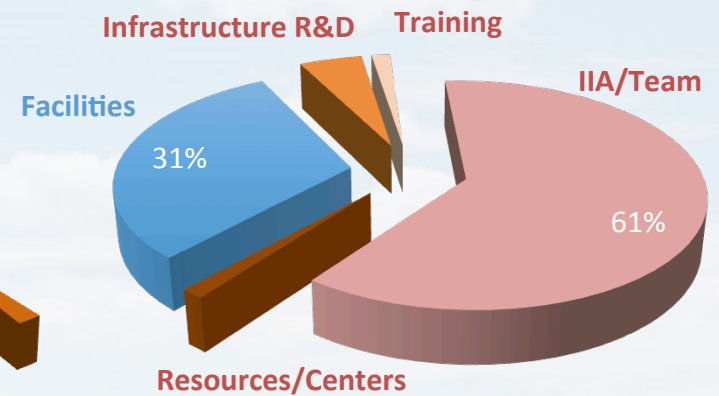
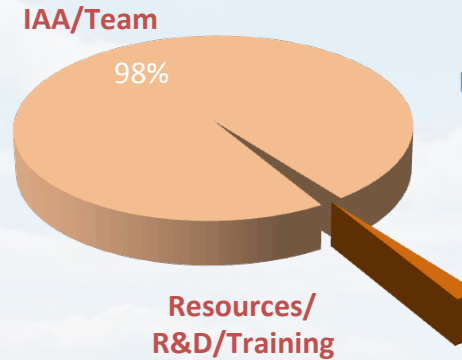
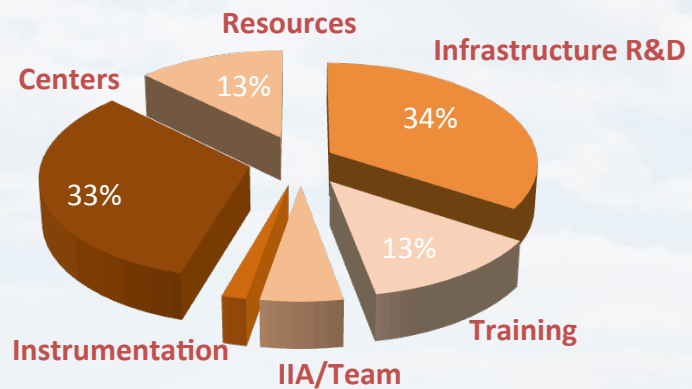
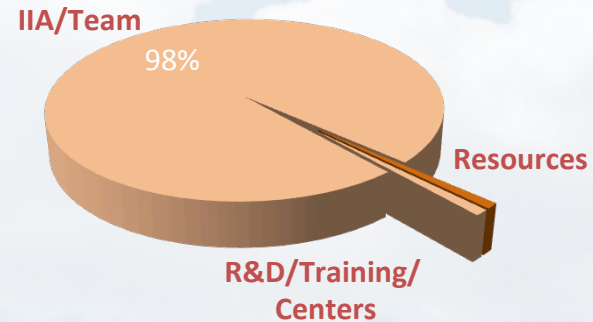
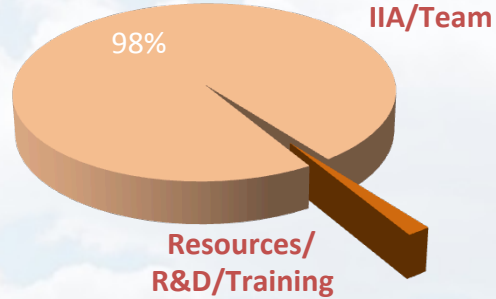
\$ 210M

Environmental
Biology
(DEB)

\$ 140M

Emerging
Frontiers
(EF)

\$ 130M





NATIONAL SCIENCE FOUNDATION

NSF IDEAS FOR
FUTURE
INVESTMENT

Dr. France A. Córdoba

Director, National Science Foundation

May 6, 2016

Windows on the Universe

The Era of Multi-messenger Astrophysics



“We have come to a special moment in understanding our universe: for the first time we can explore mysteries in the electro-magnetic regime, the particle regime, and the gravitational wave regime. is the agency that uniquely can do this with ground based observatories...”

“With so much potential for discovery, we must increase our investment in the large number of potential U.S. users, in exploiting the big data that these observatories are producing, and in increasing the sensitivity of these and other ground-based facilities.”

Dr. Córdoba

Mid-scale Research Infrastructure



"You are now familiar...with the limitation of our MREFC processes with respect to funding opportunities that cost between several M\$ and 100 M\$."

"Lowering the threshold for MREFC expenditures, with appropriate modification of processes, would increase the flexibility for excellent science to be done across the agency."

Dr. Córdoba

NAPA Study

Study commissioned by NSF in early 2015
Evaluate NSF's use of Cooperative
Agreements for Large Scale Research
Infrastructure Investments
Final Report received December 17, 2015
Implementation now underway





QUESTIONS & DISCUSSION?